# 2022 TEA

Several years ago *The Endians* installed a vast network of pneumatic tubes to deliver newspapers. Sadly readership is down, so the tubes are being repurposed as a hydraulic system to distribute tea to parched villagers.

Existing plans show the network has $h$ houses and $h-1$ tubes, and indicate which houses are directly connected by a tube; a tube only connects the two houses at its ends. It is possible for tea to flow between any two houses by a series of tubes. If all the houses connected to only a single tube are removed from the plan and at least two houses remain, it is possible for tea to flow on a route that takes in every remaining house without repeating a house.

The system requires careful calibration. Too much tea before time and you have a mighty fountain momently forced through the chimney. Nobody wants a repeat of the great newspaper delivery debacle of '19. As such, tea is gradually introduced to the system by picking a pair of houses and supplying tea to them and to all houses on the direct route between them.

For example, suppose that the plan connects 1-2, 1-3, 1-4 & 2-5. 10 units are supplied to each of the houses on the route from 4 to 5 (which is 4-1-2-5), followed by 5 units on the route from 3 to 1 (which is 3-1). House 3 now has 5 units; houses 4, 2 and 5 each have 10 units; house 1 has 15 units.

## SAMPLE INPUT

```
5 2
1 2
1 3
1 4
2 5
4 5 10
3 1 5
```

The first line of input will consist of two integers, $h$ ($2 \leq h \leq 2^{19}$) then $t$ ($1 \leq t \leq 2^{18}$), indicating the number of houses followed by the number of calibrating tea supplies. The next $h-1$ lines will consist of a pair of integers, indicating two distinct houses that are directly connected by a tube; no pair of houses will be repeated. The next $t$ lines will consist of three integers; the two houses at the extremes of a calibrating tea distribution followed by the amount of tea (between 1 and $2^{12}$ units) to be supplied to each house during this part of the calibration.

You should output $h$ lines. The $i^{th}$ line should give the amount of tea supplied to the $i^{th}$ house during the calibration.

## SAMPLE OUTPUT

```
15
10
5
10
10
```